



<110> Jager, Dirk  
Stockert, Elizabeth  
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Old, Lloyd  
Chen, Yao-tseng

<120> Isolated Nucleic Acid Molecules Encoding Cancer Associated Antigens,  
the Antigens Per Se, and Uses Thereof

<130> LUD 5793.1

<140> US 10/729,340

<141> 2003-12-04

<150> US 60/430,869

<151> 2002-12-04

<150> US 10/181,663

<151> 2000-11-29

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<151> 2000-06-22

<150> US 09/451,739

<151> 1999-11-30

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<212> DNA

<213> Homo sapiens

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<212> DNA

<213> Homo sapiens

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aacgcgtcca	gcaaccacga	ccacgacgac	ggcgccctcg	gcacacccaa	ggagaagaag	600
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<211> 742

<212> DNA

<213> Homo sapiens

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cggcagggtg	acagccacgt	ggagctgttc	gaggcgagc	aggagctggg	cgacacagcg	360
ggcaacagcg	gcaaggctgg	cgcgacagc	cccaaaggcg	aggcggcagc	gcaggctgac	420
aagcccaaca	gcaagcgttc	acggcggcag	cgcaacaacg	agaaccgtga	gaacgcgtcc	480
agcaaccacg	accacgacga	cggcgcctcg	ggcacaccca	aggagaagaa	ggccaagacc	540
tccaagaaga	agaagcgttc	caaggccaag	gcggagcgag	aggcgtcccc	tgccgacctc	600
cccatcgacc	ccaacgaacc	cacgtactgt	ctgtgcacac	aggtctccta	tggggagatg	660
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ctttgtctcc aagccgttcc aaactgagta ccgggagacg acacaaaggg agggcggtga 180
cggatggcgc aggcgcggga gccgcctagg ctgctgggag tgggtggccg gccgcggaat 240
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gcagaagcgg cggatgtgc actgtgtgca gcgcgcgctg atccgcagcc aggagctggg 360
cgacgagaag atccagatcg tgagccagat ggtggagctg gtggagaacc gcacgcggca 420
ggtggacagc cacgtggagc tgttcgaggc gcagcaggag ctgggcgaca cagcgggcaa 480
cagcggcaag gctggcgcg acaggcccaa aggcgaggcg gcagcgagg ctgacaagcc 540
caacagcaag cgctcacggc ggcagcgcaa caacgagaac cgtgagaacg cgtccagcaa 600
ccacgaccac gacgacggcg cctcgggcac acccaaggag aagaaggcca agacctcaa 660
gaagaagaag cgctccaagg ccaggcgga gcgagaggcg tcccctgccg acctcccat 720
cgacccaac gaaccacgt actgtctgtg caaccaggtc tcctatgggg agatgatcgg 780
ctgcgacaac gacgagtgcc ccatcgagtg gttccacttc tcgtgcgtgg ggctcaatca 840
taaaccgaag ggcaagt
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<210> 5  
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 <212> PRT  
 <213> Homo sapiens  
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Glu Asp Tyr Leu Asp Ser Ile Glu Ser Leu Pro Phe Asp Leu Gln Arg
20          25          30
Asn Val Ser Leu Met Arg Glu Ile Asp Ala Lys Tyr Gln Glu Ile Leu
35          40          45
Lys Glu Leu Asp Glu Cys Tyr Glu Arg Phe Ser Arg Glu Thr Asp Gly
50          55          60
Ala Gln Lys Arg Arg Met Leu His Cys Val Gln Arg Ala Leu Ile Arg
65          70          75          80
Ser Gln Glu Leu Gly Asp Glu Lys Ile Gln Ile Val Ser Gln Met Val
85          90          95
Glu Leu Val Glu Asn Arg Thr Arg Gln Val Asp Ser His Val Glu Leu
100         105         110
Phe Glu Ala Gln Gln Glu Leu Gly Asp Thr Val Gly Asn Ser Gly Lys
115         120         125
Val Gly Ala Asp Arg Pro Asn Gly Asp Ala Val Ala Gln Ser Asp Lys
130         135         140
Pro Asn Ser Lys Arg Ser Arg Arg Gln Arg Asn Asn Glu Asn Arg Glu
145         150         155         160
Asn Ala Ser Ser Asn His Asp His Asp Asp Gly Ala Ser Gly Thr Pro
165         170         175
Lys Glu Lys Lys Ala Lys Thr Ser Lys Lys Lys Lys Arg Ser Lys Ala
180         185         190
Lys Ala Glu Arg Glu Ala Ser Pro Ala Asp Leu Pro Ile Asp Pro Asn
195         200         205
Glu Pro Thr Tyr Cys Leu Cys Asn Gln Val Ser Tyr Gly Glu Met Ile
210         215         220
Gly Cys Asp Asn Asp Glu Cys Pro Ile Glu Trp Phe His Phe Ser Cys
225         230         235         240
Val Gly Leu Asn His Lys Pro Lys Gly Lys Trp Tyr Cys Pro Lys Cys
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 <213> Homo sapiens  
 <400> 6  
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 Arg Thr Arg Gln Val Asp Ser His Val Glu Leu Phe Glu Ala Gln Gln  
 35 40 45  
 Glu Leu Gly Asp Thr Val Gly Asn Ser Gly Lys Val Gly Ala Asp Arg  
 50 55 60  
 Pro Asn Gly Asp Ala Val Ala Gln Ser Asp Lys Pro Asn Ser Lys Arg  
 65 70 75 80  
 Ser Arg Arg Gln Arg Asn Asn Glu Asn Arg Glu Asn Ala Ser Ser Asn  
 85 90 95  
 His Asp His Asp Asp Gly Ala Ser Gly Thr Pro Lys Glu Lys Lys Ala  
 100 105 110  
 Lys Thr Ser Lys Lys Lys Lys Arg Ser Lys Ala Lys Ala Glu Arg Glu  
 115 120 125  
 Ala Ser Pro Ala Asp Leu Pro Ile Asp Pro Asn Glu Pro Thr Tyr Cys  
 130 135 140  
 Leu Cys Asn Gln Val Ser Tyr Gly Glu Met Ile Gly Cys Asp Asn Asp  
 145 150 155 160  
 Glu Cys Pro Ile Glu Trp Phe His Phe Ser Cys Val Gly Leu Asn His  
 165 170 175  
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 Lys Thr Met Asp Lys Ala Leu Glu Lys Ser Lys Lys Glu Arg Ala Tyr  
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 Asn Arg  
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<210> 7  
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 <212> PRT  
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 20 25 30  
 Ala Leu Ile Arg Ser Gln Glu Leu Gly Asp Glu Lys Ile Gln Ile Val  
 35 40 45  
 Ser Gln Met Val Glu Leu Val Glu Asn Arg Thr Arg Gln Val Asp Ser  
 50 55 60  
 His Val Glu Leu Phe Glu Ala Gln Gln Glu Leu Gly Asp Thr Val Gly  
 65 70 75 80

Asn	Ser	Gly	Lys	Val	Gly	Ala	Asp	Arg	Pro	Asn	Gly	Asp	Ala	Val	Ala
			85						90					95	
Gln	Ser	Asp	Lys	Pro	Asn	Ser	Lys	Arg	Ser	Arg	Arg	Gln	Arg	Asn	Asn
			100					105					110		
Glu	Asn	Arg	Glu	Asn	Ala	Ser	Ser	Asn	His	Asp	His	Asp	Asp	Gly	Ala
			115				120					125			
Ser	Gly	Thr	Pro	Lys	Glu	Lys	Lys	Ala	Lys	Thr	Ser	Lys	Lys	Lys	Lys
			130			135					140				
Arg	Ser	Lys	Ala	Lys	Ala	Glu	Arg	Glu	Ala	Ser	Pro	Ala	Asp	Leu	Pro
					150					155					160
Ile	Asp	Pro	Asn	Glu	Pro	Thr	Tyr	Cys	Leu	Cys	Asn	Gln	Val	Ser	Tyr
			165					170						175	
Gly	Glu	Met	Ile	Gly	Cys	Asp	Asn	Asp	Glu	Cys	Pro	Ile	Glu	Trp	Phe
			180				185					190			
His	Phe	Ser	Cys	Val	Gly	Leu	Asn	His	Lys	Pro	Lys	Gly	Lys	Trp	Tyr
			195				200					205			
Cys	Pro	Lys	Cys	Arg	Gly	Glu	Asn	Glu	Lys	Thr	Met	Asp	Lys	Ala	Leu
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Glu	Lys	Ser	Lys	Lys	Glu	Arg	Ala	Tyr	Asn	Arg					
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<212> DNA

<213> Homo sapiens

<221> CDS

<222> 695,714

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<210> 9

<211> 32

<212> DNA

<213> Homo sapiens

<400> 9

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<210> 10

<211> 23

<212> DNA

<213> Homo sapiens

<400> 10

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23

<210> 11

<211> 21

<212> DNA

<213> Homo sapiens

<400> 11

cccagcggcc ctgacgctgt c

21

<210> 12

<211> 23

<212> DNA

<213> Homo sapiens

<400> 12

cgtggtcgtg gttgctggac gcg

23

<210> 13

<211> 23

<212> DNA

<213> Homo sapiens

<400> 13

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23

<210> 14

<211> 23

<212> DNA

<213> Homo sapiens

<400> 14

cgtggtcgtg gttgctggac gcg

23

<210> 15

<211> 2030

<212> DNA

<213> Homo sapiens

<221> CDS

<222> 1628, 1752, 1758, 1769, 1789, 1873, 1908, 1915, 1933, 1970, 1976, 2022

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aagaaaattc	ttgggattct	gagagtctcc	gtgagactgt	ttcacagaag	gatgtgtgtg	660
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<210> 16
<211> 512
<212> PRT
<213> Homo sapiens
<400> 16

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Thr Phe Lys Ala Glu Pro Pro Glu Lys Pro Ser Ala Phe Glu Pro Ala
          20          25          30
Ile Glu Met Gln Lys Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn
          35          40          45
Glu Gln Thr Leu Arg Ala Asp Glu Ile Leu Pro Ser Glu Ser Lys Gln
          50          55          60
Lys Asp Tyr Glu Glu Ser Ser Trp Asp Ser Glu Ser Leu Cys Glu Thr
65          70          75          80
Val Ser Gln Lys Asp Val Cys Leu Pro Lys Ala Thr His Gln Lys Glu
          85          90          95
Ile Asp Lys Ile Asn Gly Lys Leu Glu Ser Pro Asp Asn Asp Gly
          100          105          110
Phe Leu Lys Ala Pro Cys Arg Met Lys Val Ser Ile Pro Thr Lys Ala
          115          120          125
Leu Glu Leu Met Asp Met Gln Thr Phe Lys Ala Glu Pro Pro Glu Lys
          130          135          140
Pro Ser Ala Phe Glu Pro Ala Ile Glu Met Gln Lys Ser Val Pro Asn
145          150          155          160
Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Gln Met
          165          170          175
Phe Pro Ser Glu Ser Lys Gln Lys Lys Val Glu Glu Asn Ser Trp Asp
          180          185          190
Ser Glu Ser Leu Arg Glu Thr Val Ser Gln Lys Asp Val Cys Val Pro
          195          200          205
Lys Ala Thr His Gln Lys Glu Met Asp Lys Ile Ser Gly Lys Leu Glu
          210          215          220
Asp Ser Thr Ser Leu Ser Lys Ile Leu Asp Thr Val His Ser Cys Glu
225          230          235          240

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Met	Glu	Gln	Met	Lys	Lys	Lys	Phe	Cys	Val	Leu	Lys	Lys	Lys	Leu	Ser
			260					265					270		
Glu	Ala	Lys	Glu	Ile	Lys	Ser	Gln	Leu	Glu	Asn	Gln	Lys	Val	Lys	Trp
		275				280						285			
Glu	Gln	Glu	Leu	Cys	Ser	Val	Arg	Leu	Thr	Leu	Asn	Gln	Glu	Glu	Glu
		290				295					300				
Lys	Arg	Arg	Asn	Ala	Asp	Ile	Leu	Asn	Glu	Lys	Ile	Arg	Glu	Glu	Leu
305					310					315					320
Gly	Arg	Ile	Glu	Glu	Gln	His	Arg	Lys	Glu	Leu	Glu	Val	Lys	Gln	Gln
			325						330					335	
Leu	Glu	Gln	Ala	Leu	Arg	Ile	Gln	Asp	Ile	Glu	Leu	Lys	Ser	Val	Glu
			340					345					350		
Ser	Asn	Leu	Asn	Gln	Val	Ser	His	Thr	His	Glu	Asn	Glu	Asn	Tyr	Leu
		325					360					365			
Leu	His	Glu	Asn	Cys	Met	Leu	Lys	Lys	Glu	Ile	Ala	Met	Leu	Lys	Leu
		370				375					380				
Glu	Ile	Ala	Thr	Leu	Lys	His	Gln	Tyr	Gln	Glu	Lys	Glu	Asn	Lys	Tyr
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<211> 1397

<212> PRT

<213> Homo sapiens

<400> 32

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Arg Pro Ser Pro Phe Ser Gln Leu Val Tyr Thr Ser Asn Asp Ser Tyr
      20              25              30
Ile Val His Ser Gly Asp Leu Arg Lys Ile His Lys Ala Ala Ser Arg
      35              40              45
Gly Gln Val Arg Lys Leu Glu Lys Met Thr Lys Arg Lys Lys Thr Ile

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Asn Leu Asn Ile Gln Asp Ala Gln Lys Arg Thr Ala Leu His Trp Ala		
65	70	75
Cys Val Asn Gly His Glu Glu Val Val Thr Phe Leu Val Asp Arg Lys		80
	85	90
Cys Gln Leu Asp Val Leu Asp Gly Glu His Arg Thr Pro Leu Met Lys		95
	100	105
Ala Leu Gln Cys His Gln Glu Ala Cys Ala Asn Ile Leu Ile Asp Ser		110
	115	120
Gly Ala Asp Ile Asn Leu Val Asp Val Tyr Gly Asn Thr Ala Leu His		125
	130	135
Tyr Ala Val Tyr Ser Glu Ile Leu Ser Val Val Ala Lys Leu Leu Ser		140
145	150	155
His Gly Ala Val Ile Glu Val His Asn Lys Ala Ser Leu Thr Pro Leu		160
	165	170
Leu Leu Ser Ile Thr Lys Arg Ser Glu Gln Ile Val Glu Phe Leu Leu		175
	180	185
Ile Lys Asn Ala Asn Ala Asn Ala Val Asn Lys Tyr Lys Cys Thr Ala		190
	195	200
Leu Met Leu Ala Val Cys His Gly Ser Ser Glu Ile Val Gly Met Leu		205
	210	215
Leu Gln Gln Asn Val Asp Val Phe Ala Ala Asp Ile Cys Gly Val Thr		220
225	230	235
Ala Glu His Tyr Ala Val Thr Cys Gly Phe His His Ile His Glu Gln		240
	245	250
Ile Met Glu Tyr Ile Arg Lys Leu Ser Lys Asn His Gln Asn Thr Asn		255
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Pro Glu Gly Thr Ser Ala Gly Thr Pro Asp Glu Ala Ala Pro Leu Ala		270
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Glu Arg Thr Pro Asp Thr Ala Glu Ser Leu Val Glu Lys Thr Pro Asp		285
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Glu Ala Ala Pro Leu Val Glu Arg Thr Pro Asp Thr Ala Glu Ser Leu		300
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Val Glu Lys Thr Pro Asp Glu Ala Ala Ser Leu Val Glu Gly Thr Ser		320
	325	330
Asp Lys Ile Gln Cys Leu Glu Lys Ala Thr Ser Gly Lys Phe Glu Gln		335
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Ser Ala Glu Gly Thr Pro Arg Glu Ile Thr Ser Pro Ala Lys Glu Thr		350
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Ser Glu Lys Phe Thr Trp Pro Ala Lys Gly Arg Pro Arg Lys Ile Ala		365
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Trp Glu Lys Lys Glu Asp Thr Pro Arg Glu Ile Met Ser Pro Ala Lys		380
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Glu Thr Ser Glu Lys Phe Thr Trp Ala Ala Lys Gly Arg Pro Arg Lys		400
	405	410
Ile Ala Trp Glu Lys Lys Glu Thr Pro Val Lys Thr Gly Cys Val Ala		415
	420	425
Arg Val Thr Ser Asn Lys Thr Lys Val Leu Glu Lys Gly Arg Ser Lys		430
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Met Ile Ala Cys Pro Thr Lys Glu Ser Ser Thr Lys Ala Ser Ala Asn		445
	450	455
Asp Gln Arg Phe Pro Ser Glu Ser Lys Gln Glu Glu Asp Glu Glu Tyr		460
465	470	475
Ser Cys Asp Ser Arg Ser Leu Phe Glu Ser Ser Ala Lys Ile Gln Val		480
	485	490
Cys Ile Pro Glu Ser Ile Tyr Gln Lys Val Met Glu Ile Asn Arg Glu		495
	500	505
		510

Val	Glu	Glu	Pro	Pro	Lys	Lys	Pro	Ser	Ala	Phe	Lys	Pro	Ala	Ile	Glu
	515						520					525			
Met	Gln	Asn	Ser	Val	Pro	Asn	Lys	Ala	Phe	Glu	Leu	Lys	Asn	Glu	Gln
	530					535					540				
Thr	Leu	Arg	Ala	Asp	Pro	Met	Phe	Pro	Pro	Glu	Ser	Lys	Gln	Lys	Asp
545					550					555					560
Tyr	Glu	Glu	Asn	Ser	Trp	Asp	Ser	Glu	Ser	Leu	Cys	Glu	Thr	Val	Ser
				565						570				575	
Gln	Lys	Asp	Val	Cys	Leu	Pro	Lys	Ala	Thr	His	Gln	Lys	Glu	Ile	Asp
			580					585					590		
Lys	Ile	Asn	Gly	Lys	Leu	Glu	Glu	Ser	Pro	Asn	Lys	Asp	Gly	Leu	Leu
		595					600					605			
Lys	Ala	Thr	Cys	Gly	Met	Lys	Val	Ser	Ile	Pro	Thr	Lys	Ala	Leu	Glu
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Leu	Lys	Asp	Met	Gln	Thr	Phe	Lys	Ala	Glu	Pro	Pro	Gly	Lys	Pro	Ser
625					630					635					640
Ala	Phe	Glu	Pro	Ala	Thr	Glu	Met	Gln	Lys	Ser	Val	Pro	Asn	Lys	Ala
				645					650					655	
Leu	Glu	Leu	Lys	Asn	Glu	Gln	Thr	Leu	Arg	Ala	Asp	Glu	Ile	Leu	Pro
			660					665					670		
Ser	Glu	Ser	Lys	Glu	Lys	Asp	Tyr	Glu	Glu	Asn	Ser	Trp	Asp	Thr	Glu
		675					680						685		
Ser	Leu	Cys	Glu	Thr	Val	Ser	Gln	Lys	Asp	Val	Cys	Leu	Pro	Lys	Ala
	690					695					700				
Ala	His	Gln	Lys	Glu	Ile	Asp	Lys	Ile	Asn	Gly	Lys	Leu	Glu	Gly	Ser
705					710					715					720
Pro	Val	Lys	Asp	Gly	Leu	Leu	Lys	Ala	Asn	Cys	Gly	Met	Lys	Val	Ser
				725					730					735	
Ile	Pro	Thr	Lys	Ala	Leu	Glu	Leu	Met	Asp	Met	Gln	Thr	Phe	Lys	Ala
			740					745					750		
Glu	Pro	Pro	Glu	Lys	Pro	Ser	Ala	Phe	Glu	Pro	Ala	Ile	Glu	Met	Gln
			755				760						765		
Lys	Ser	Val	Pro	Asn	Lys	Ala	Leu	Glu	Leu	Lys	Asn	Glu	Gln	Thr	Leu
	770					775					780				
Arg	Ala	Asp	Glu	Ile	Leu	Pro	Ser	Glu	Ser	Lys	Gln	Lys	Asp	Tyr	Glu
785					790					795					800
Glu	Ser	Ser	Trp	Asp	Ser	Glu	Ser	Leu	Cys	Glu	Thr	Val	Ser	Gln	Lys
				805					810					815	
Asp	Val	Cys	Leu	Pro	Lys	Ala	Thr	His	Gln	Lys	Glu	Ile	Asp	Lys	Ile
			820					825					830		
Asn	Gly	Lys	Leu	Glu	Glu	Ser	Pro	Asp	Asn	Asp	Gly	Phe	Leu	Lys	Ala
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Pro	Cys	Arg	Met	Lys	Val	Ser	Ile	Pro	Thr	Lys	Ala	Leu	Glu	Leu	Met
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Gln	Lys	Glu	Met	Asp	Lys	Ile	Ser	Gly	Lys	Leu	Glu	Asp	Ser	Thr	Ser
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Leu	Ser	Lys	Ile	Leu	Asp	Thr	Val	His	Ser	Cys	Glu	Arg	Ala	Arg	Glu

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Leu Gln Lys Asp His Cys Glu Gln Arg Thr Gly Lys Met Glu Gln Met					
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Lys Lys Lys Phe Cys Val Leu Lys Lys Lys Leu Ser Glu Ala Lys Glu					
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Ile Lys Ser Gln Leu Glu Asn Gln Lys Val Lys Trp Glu Gln Glu Leu					
	1010		1015		1020
Cys Ser Val Arg Leu Thr Leu Asn Gln Glu Glu Lys Arg Arg Asn					
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Ala Asp Ile Leu Asn Glu Lys Ile Arg Glu Glu Leu Gly Arg Ile Glu					
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Glu Gln His Arg Lys Glu Leu Glu Val Lys Gln Gln Leu Glu Gln Ala					
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Leu Arg Ile Gln Asp Ile Glu Leu Lys Ser Val Glu Ser Asn Leu Asn					
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Gln Val Ser His Thr His Glu Asn Glu Asn Tyr Leu Leu His Glu Asn					
	1090		1095		1100
Cys Met Leu Lys Lys Glu Ile Ala Met Leu Lys Leu Glu Ile Ala Thr					
1105		1110		1115	1120
Leu Lys His Gln Tyr Gln Glu Lys Glu Asn Lys Tyr Phe Glu Asp Ile					
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Lys Ile Leu Lys Glu Lys Asn Ala Glu Leu Gln Met Thr Leu Lys Leu					
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Lys Glu Glu Ser Leu Thr Lys Arg Ala Ser Gln Tyr Ser Gly Gln Leu					
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Lys Val Leu Ile Ala Glu Asn Thr Met Leu Thr Ser Lys Leu Lys Glu					
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Lys Gln Asp Lys Glu Ile Leu Glu Ala Glu Ile Glu Ser His His Pro					
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Arg Leu Ala Ser Ala Val Gln Asp His Asp Gln Ile Val Thr Ser Arg					
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Lys Ser Gln Glu Pro Ala Phe His Ile Ala Gly Asp Ala Cys Leu Gln					
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Arg Lys Met Asn Val Asp Val Ser Ser Thr Ile Tyr Asn Asn Glu Val					
	1235		1240		1245
Leu His Gln Pro Leu Ser Glu Ala Gln Arg Lys Ser Lys Ser Leu Lys					
	1250		1255		1260
Ile Asn Leu Asn Tyr Ala Gly Asp Ala Leu Arg Glu Asn Thr Leu Val					
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Ser Glu His Ala Gln Arg Asp Gln Arg Glu Thr Gln Cys Gln Met Lys					
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Glu Ala Glu His Met Tyr Gln Asn Glu Gln Asp Asn Val Asn Lys His					
	1300		1305		1310
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Lys Asn Met Trp Leu Gln Gln Gln Leu Val His Ala His Lys Lys Ala					
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Asp Asn Lys Ser Lys Ile Thr Ile Asp Ile His Phe Leu Glu Arg Lys					
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Met Gln His His Leu Leu Lys Glu Lys Asn Glu Glu Ile Phe Asn Tyr					
	1365		1370		1375
Asn Asn His Leu Lys Asn Arg Ile Tyr Gln Tyr Glu Lys Glu Lys Ala					
	1380		1385		1390
Glu Thr Glu Asn Ser					
	1395				